IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claim 44 in accordance with the following:

1. (PREVIOUSLY PRESENTED) A halftoning method of converting a multilevel input image into a binary image, comprising:

calculating the multilevel value of a given noteworthy pixel of the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of pixels in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel; and

converting the estimated multilevel value of the noteworthy pixel into a binary value in accordance with the multilevel values each time the multilevel input image is converted into a binary image.

2. (CANCELLED)

3. (PREVIOUSLY PRESENTED) A halftoning method according to claim 1, wherein in said calculating, the estimated value of the noteworthy pixel is calculated using a two-dimensional digital filter for the multilevel pixels in the predetermined area.

4. (ORIGINAL) A halftoning method according to claim 3, wherein said digital filter is a two-dimensional digital filter dedicated to profile enhancement.

5. (ORIGINAL) A halftoning method according to claim 4, wherein said two-dimensional digital filter dedicated to profile enhancement is a Laplacian filter.

6. (ORIGINAL) A halftoning method according to claim 4, wherein said two-dimensional digital filter dedicated to profile enhancement is a Prewitt filter.

7. (PREVIOUSLY PRESENTED) A halftoning method according to claim 1, wherein a simple threshold method is used in said converting.

8. (PREVIOUSLY PRESENTED) A halftoning method according to claim 1, further comprising diffusing a possible error, which has occurred in binary value with respect to the noteworthy pixel, to multilevel pixels adjacent to the noteworthy pixel by a technique.

9. (PREVIOUSLY PRESENTED) A halftoning method according to claim 8, wherein a possible error, which has occurred in binary value with respect to the noteworthy pixel, is diffused to the pixels based on which the estimated value of the noteworthy pixel is calculated.

10. (PREVIOUSLY PRESENTED) A halftoning method according to claim 8, further comprising: changing the technique of said error diffusing to another technique in accordance with a predetermined manner as the scanning of the pixels of the multilevel input image progresses.

11. (PREVIOUSLY PRESENTED) A halftoning method according to claim 9, further comprising: changing the technique of said error diffusing to another technique in accordance with a predetermined manner as the scanning of the pixels of the multilevel input image progresses.

12. (PREVIOUSLY PRESENTED) A halftoning method according to claim 10, further comprising: t discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image,

the error diffusion technique being changed from one to another in said changing when the result of said discriminating is positive.

13. (PREVIOUSLY PRESENTED) A halftoning method according to claim 11, further comprising: discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image,

the error diffusion technique being changed from one to another in said changing when the result of said discriminating is positive.

14. (PREVIOUSLY PRESENTED) A halftoning method of converting a multilevel input image into a binary image, comprising:

calculating the multilevel value of a given noteworthy pixel of the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of pixels other than the noteworthy pixel;

converting the estimated multilevel value of the noteworthy pixel into a binary value;

diffusing a possible error, which has occurred in binary value with respect to the noteworthy pixel, to multilevel pixels adjacent to the noteworthy pixel by a technique;

changing the technique of said error diffusing to another technique in accordance with a predetermined manner as the scanning of the pixels of the multilevel input image progresses;

discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image, the error diffusion technique being changed from one to another in said changing of the technique if the result of said discriminating is positive; and

detecting the direction in which the profile of the multilevel input image extends with respect to the noteworthy pixel, values according to the occurred error being added to the values of unscanned pixels along the detected direction of the profile as an exceptional process, in said error diffusing when the result of said discriminating is positive.

15. (PREVIOUSLY PRESENTED) A halftoning method according to claim 13, further comprising: detecting the direction in which the profile of the multilevel input image extends with respect to the noteworthy pixel, and

wherein values according to the occurred error being added to the values of unscanned pixels along the detected direction of the profile as an exceptional process, in said error diffusing when the result of said discriminating is positive.

16. (PREVIOUSLY PRESENTED) A halftoning method according to claim 10, wherein in said changing, the error diffusion technique is changed for every pixel of the multilevel input image.

17. (PREVIOUSLY PRESENTED) A halftoning method according to claim 11, wherein in said changing, the error diffusion technique is changed for every pixel of the multilevel input image.

18. (PREVIOUSLY PRESENTED) A halftoning method of converting a multilevel input image into a binary image, comprising:

calculating the multilevel value of a given noteworthy pixel of the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of pixels other than the noteworthy pixel;

converting the estimated multilevel value of the noteworthy pixel into a binary value;

diffusing a possible error, which has occurred in binary value with respect to the noteworthy pixel, to multilevel pixels adjacent to the noteworthy pixel by a technique;

changing the technique of said error diffusing to another technique in accordance with a predetermined manner as the scanning of the pixels of the multilevel input image progresses;

discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image, and detecting the direction in which the profile of the multilevel input image extends with respect to the noteworthy pixel, and

wherein in said changing, the error diffusion technique is changed for every pixel of the multilevel input image, and

values according to the occurred error being added to the values of unscanned pixels along the detected direction of the profile as an exceptional process, in said error diffusing when the result of said discriminating is positive.

19. (PREVIOUSLY PRESENTED) A halftoning method according to claim 17, further comprising: discriminating whether or not the noteworthy pixel is a pixel constituting part of a profile of the multilevel input image, and detecting the direction in which the profile of the multilevel input image extends with respect to the noteworthy pixel, and

values according to the occurred error being added to the values of unscanned pixels along the detected direction of the profile as an exceptional process, in said error diffusing when the result of said discriminating is positive.

20. (ORIGINAL) A halftoning method according to claim 12, wherein said profile discriminating is carried out by calculating a profile value of the noteworthy pixel based on both the multilevel value of the noteworthy pixel and those of the adjacent pixels and then comparing the calculated profile value with a predetermined value.

21. (ORIGINAL) A halftoning method according to claim 13, wherein said profile discriminating is carried out by calculating a profile value of the noteworthy pixel based on both the multilevel value of the noteworthy pixel and those of the adjacent pixels and then comparing the calculated profile value with a predetermined value.

22. (ORIGINAL) A halftoning method according to claim 20, wherein a two-dimensional digital filter dedicated to profile enhancement is used in said calculating of the profile value.

23. (ORIGINAL) A halftoning method according to claim 21, wherein a two-dimensional digital filter dedicated to profile enhancement is used in said calculating of the profile value.

24. (ORIGINAL) A halftoning method according to claim 22, wherein said two-dimensional digital filter dedicated to profile enhancement is a Laplacian filter.

25. (ORIGINAL) A halftoning method according to claim 23, wherein said two-dimensional digital filter dedicated to profile enhancement is a Laplacian filter.

26. (ORIGINAL) A halftoning method according to claim 22, wherein said two-dimensional digital filter dedicated to profile enhancement is a Prewitt filter.

27. (ORIGINAL) A halftoning method according to claim 23, wherein said two-dimensional digital filter dedicated to profile enhancement is a Prewitt filter.

28. (ORIGINAL) A halftoning method according to claim 20, wherein the profile value is directly calculated by making addition and subtraction individually on the multilevel values of the noteworthy pixel and the adjacent pixels.

29. (ORIGINAL) A halftoning method according to claim 21, wherein the profile value is directly calculated by making addition and subtraction individually on the multilevel values of the noteworthy pixel and the adjacent pixels.

30. (PREVIOUSLY PRESENTED) A halftoning method of converting a multilevel input image into a binary image, comprising:

calculating the multilevel value of a given noteworthy pixel of the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of pixels other than the noteworthy pixel;

converting the estimated multilevel value of the noteworthy pixel into a binary value;

diffusing a possible error, which has occurred in binary value with respect to the noteworthy pixel, to multilevel pixels adjacent to the noteworthy pixel by a technique;

changing the technique of said error diffusing to another technique in accordance with a predetermined manner as the scanning of the pixels of the multilevel input image progresses; and

wherein in said changing, the error diffusion technique is changed to another technique that is selected in a predetermined order from various different error diffusion techniques.

31. (PREVIOUSLY PRESENTED) A halftoning method according to claim 11, wherein in said changing, the error diffusion technique is changed to another technique that is selected in a predetermined order from various different error diffusion techniques.

32. (PREVIOUSLY PRESENTED) A halftoning method according to claim 10, wherein in said changing, the error diffusion technique is changed to another technique that is selected at random from various different error diffusion techniques.

33. (PREVIOUSLY PRESENTED) A halftoning method according to claim 11, wherein in said changing, the error diffusion technique is changed to another technique that is selected at random from various different error diffusion techniques.

34. (PREVIOUSLY PRESENTED) A halftoning method according to claim 10, wherein

in said error diffusing, the error diffusion technique is a technique of proportionally distributing the occurred error to the plural unscanned pixels adjacent to the noteworthy pixel in accordance with a predetermined weighting pattern, and

in said changing, the error diffusion technique is changed by changing said predetermined weighting pattern to another pattern.

35. (PREVIOUSLY PRESENTED) A halftoning method according to claim 11, wherein

in said error diffusing, the error diffusion technique is a technique of proportionally distributing the occurred error to the plural unscanned pixels adjacent to the noteworthy pixel in accordance with a predetermined weighting pattern, and

in said changing, the error diffusion technique is changed by changing said predetermined weighting pattern to another pattern.

36. (ORIGINAL) A halftoning method according to claim 12, wherein if a plurality of multilevel input images to be halftoned have a substantially identical profile, said discriminating is carried out for only one of the plural multilevel input images, and the result of said discriminating is used in halftoning the remaining multilevel input images.

37. (ORIGINAL) A halftoning method according to claim 13, wherein if a plurality of multilevel input images to be halftoned have a substantially identical profile, said discriminating is carried out for only one of the plural multilevel input images, and the result of said discriminating is used in halftoning the remaining multilevel input images.

38. (PREVIOUSLY PRESENTED) A halftoning apparatus for converting a multilevel input image into a binary image, comprising:

an estimating section for calculating the multilevel value of a given noteworthy pixel of the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of pixels in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel; and

a binarizing section for converting the estimated multilevel value of the noteworthy pixel into a binary value in accordance with the multilevel values each time the multilevel input image is converted into a binary image.

39. (PREVIOUSLY PRESENTED) A computer-readable recording medium in which a halftoning program for instructing a computer to execute a function of converting a multilevel input image into a binary image is recorded, wherein said halftoning program instructs the computer to function as the following:

an estimating section for calculating the multilevel value of a given noteworthy pixel of

the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of pixels in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel; and

a binarizing section for converting the estimated multilevel value of the noteworthy pixel into a binary value in accordance with the multilevel values each time the multilevel input image is converted into a binary image.

40. (CANCELLED)

41. (CANCELLED)

42. (PREVIOUSLY PRESENTED) A halftoning method of converting a multilevel input image into a binary image, comprising:

calculating a multilevel value of a given noteworthy pixel of the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of non-binarized pixels in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel; and

converting the estimated multilevel value of the noteworthy pixel into a binary value.

43. (PREVIOUSLY PRESENTED) A halftoning method of converting a multilevel input image into a binary image, comprising:

calculating a multilevel value of a given noteworthy pixel of the multilevel input image, as an estimated value of the noteworthy pixel, based on the multilevel values of non-binarized pixels, in a predetermined area that centers around a position for estimation located predetermined distance apart from the noteworthy pixel, downstream of the noteworthy pixel in a primary scanning direction or in a secondary scanning direction; and

converting the estimated multilevel value of the noteworthy pixel into a binary value.

44. (CURRENTLY AMENDED) A method of converting a multilevel input image into a binary image, comprising:

directly calculating a value of a noteworthy pixel of the multilevel input image from multilevel values of pixels <u>in a predetermined area centering around a position for estimation located predetermined distance apart from the noteworthy pixel</u> prior to halftoning, said

calculated value being converted to a binary value; and

selectively diffusing a possible error occurring in the binary value and subsequently changing error diffusion techniques with respect to each of the pixels surrounding the noteworthy pixel.